

Name: _____
 MAT 222
 Spring 2019
 Homework 7

*“The sad truth is that most evil is done
 by people who never make up their
 minds to be good or evil”*

–Hannah Arendt

Problem 1: Researchers are trying to determine if there is a relationship between video game players ranking (on a scale of 1, highest ranking, to 5, lowest ranking) and the difficult level they practice the game in (rated on a scale of 1, most difficult, to 5, least difficult). The data is summarized (partially) in the table below.

(a) Complete the table below:

Difficulty Level \ Ranking	1	2	3	4	5	Total
1	15	5		0	0	27
2	2			1	0	
3	1	1	0	2	0	
4	1	0	0	4		5
5			1	3	9	13
Total	19		10	10	9	62

(b) Complete the table of expected values below:

Difficulty Level \ Ranking	1	2	3	4	5
1	8.27	6.10	4.36	4.36	3.19
2	3.98	2.94	2.10		1.89
3	1.23		0.65	0.65	0.58
4	1.53	1.13	0.81	0.81	0.73
5	3.98	2.94		2.10	1.89

(c) Complete the table of χ^2 -contributions below:

Difficulty Level \ Ranking	1	2	3	4	5
1	5.47	0.20	1.61	4.35	3.92
2	0.99	8.73		0.57	1.89
3	0.04	0.01	0.64		0.58
4	0.18	1.13	0.81	12.65	0.73
5		2.94	0.57	0.39	26.81

[Turn to the back to complete the homework.]

(d) Give appropriate null and alternative hypotheses to test if there is a relationship between video game players ranking and the difficult level they practice the game in. Be sure to give your test statistic, degrees of freedom, p -value, and conclusions. [Use $\alpha = 0.01$.]

(e) Should you believe the conclusions of your statistical analyses from (c)? Why or why not?